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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,762	06/06/2005	Won-Duk Cho	2658-0356PUS1	5456
2292 7590 01/11/2008 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER QUARTERMAN, KEVIN J	
			ART UNIT 2889	PAPER NUMBER
			NOTIFICATION DATE 01/11/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

TH

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/537,762	CHO, WON-DUK	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kevin Quarterman	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>0605</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: In line 21 of page 3, it appears to the Examiner that the *metal powder* "An" should be replaced with Au (gold) instead. Appropriate correction is required.
2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### *Claim Objections*

3. Claim 1 is objected to because of the following informalities: In line 22 of the first page, claim 1 recites a list of metal powders including "An" in the list. It appears that this *metal powder* should be replaced with the metal Au (gold) instead. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. In line 17 of the second page, claim 1 recites a list of oxides including "BN" in the list. It is unclear as to what oxide "BN" represents—e.g., "BN" could be boron nitride or

"B" could be a variable that could represent a number of elements, while "N" is another variable that could represent a number of elements. For purposes of examination, the Examiner interprets "BN" to be boron nitride, which is not an oxide.

***Allowable Subject Matter***

7. Claim 1 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record neither shows or suggests a rear plate of a plasma display panel comprising a glass substrate; electrodes formed in a shape of patterns on an upper surface of the glass substrate; a dielectric layer formed on upper surfaces of the electrode and the upper surface of the glass substrate; barrier ribs formed in a shape of a pattern through etching on an upper surface of the dielectric layer; and phosphorous layers formed on side surfaces and bottom surfaces of the barrier ribs and including red, green, and blue phosphorous layers, which emit red, green, and blue light according to an electric signal, respectively, wherein: the electrodes are made from mixture of a conductive metal powder of 51 to 99.5 wt% and a first glass powder of 0.5 to 49 wt%, the conductive metal powder being at least one kind of metal powder selected from metal powder of An, Ag, Pt, Pd, Ni, and Cu, the conductive metal powder having an average particle diameter of 0.1 to  $7\mu\text{m}$ , the first glass powder having an average particle diameter of 0.5 to  $10\mu\text{m}$  and a specific resistance of  $1.0 \times 10^{-6}$  to  $5.0 \times 10^{-6} \Omega\text{-cm}$ ; the dielectric layer is made from mixture of a first filler and at least one glass powder selected from among a second glass powder and a third glass powder, the

second glass powder including PbO of 30 to 80 wt%, ZnO of 0 to 20 wt%, SiO<sub>2</sub> of 0 to 20 wt%, B<sub>2</sub>O<sub>3</sub> of 5 to 40 wt%, Al<sub>2</sub>O<sub>3</sub> of 0 to 12 wt%, Na<sub>2</sub>O+K<sub>2</sub>O+Li<sub>2</sub>O of 0 to 5 wt%, and BaO+CaO+MgO+SrO of 0 to 5 wt%, the third glass powder including Bi<sub>2</sub>O<sub>3</sub> of 36 to 84 wt%, B<sub>2</sub>O<sub>3</sub> of 5 to 28 wt%, PbO of 0 to 46 wt%, ZnO of 0 to 30 wt%, Al<sub>2</sub>O<sub>3</sub> of 0 to 13 wt%, SiO<sub>2</sub> of 0 to 10 wt%, Na<sub>2</sub>O+K<sub>2</sub>O+Li<sub>2</sub>O of 0 to 5 wt%, and BaO+CaO+MgO+SrO of 0 to 3 wt%, each of the second and third glass powders having an average particle diameter of 0.5 to 10 $\mu$ m, a softening temperature of 390 to 550 °C, a thermal expansive coefficient of  $63 \times 10^{-7}$  to  $83 \times 10^{-7}/^{\circ}\text{C}$ , a dielectric constant of 11 to 26, and an etching rate of 0.1 to 1.0 $\mu$ m/min, the first filler having an average particle diameter of 0.5 to 10 $\mu$ m and including at least one compound selected from the group consisting of TiO<sub>2</sub>, ZrO<sub>2</sub>, ZnO, Al<sub>2</sub>O<sub>3</sub>, BN, SiO<sub>2</sub>, and MgO, a ratio of volume of the first filler with respect to volume of the glass powder in the dielectric layer being 0.05 to 0.30, thereby the dielectric layer having a dielectric constant of 11 to 26, a reflectance of 50 to 80%, an etching rate of 0.1 to 1.0 $\mu$ m/min, and a porosity of 5, when the dielectric layer has been baked for 10 to 60 minutes at 450 to 600 °C; the barrier ribs are made from mixture which includes at least one glass powder selected from the group consisting of a fourth, fifth, and sixth glass powders and at least one filler selected from the group consisting of a second filler and a third filler, the fourth glass powder including ZnO of 0 to 48 wt%, SiO<sub>2</sub> of 0 to 21 wt%, B<sub>2</sub>O<sub>3</sub> of 25 to 56 wt%, Al<sub>2</sub>O<sub>3</sub> of 0 to 12 wt%, Na<sub>2</sub>O+K<sub>2</sub>O+Li<sub>2</sub>O of 0 to 38 wt%, and BaO+CaO+MgO+SrO of 0 to 15 wt%, the fifth glass powder including PbO of 25 to 65 wt%, ZnO of 0 to 35 wt%, SiO<sub>2</sub> of 0 to 26 wt%, B<sub>2</sub>O<sub>3</sub> of 5 to 30 wt%, Al<sub>2</sub>O<sub>3</sub>+SnO<sub>2</sub> of 0 to

13 wt%,  $\text{Na}_2\text{O}+\text{K}_2\text{O}+\text{Li}_2\text{O}$  of 0 to 19 wt%,  $\text{BaO}$  of 0 to 26 wt%, and  $\text{CaO}+\text{MgO}+\text{SrO}$  of 0 to 13 wt%, the sixth glass powder including  $\text{PbO}$  of 35 to 55 wt%,  $\text{B}_2\text{O}_3$  of 18 to 25 wt%,  $\text{ZnO}$  of 0 to 35 wt%,  $\text{BaO}$  of 0 to 16 wt%,  $\text{SiO}_2+\text{Al}_2\text{O}_3+\text{SnO}_2$  of 0 to 9 wt%,  $\text{CoO}+\text{CuO}+\text{MnO}_2+\text{Fe}_2\text{O}_3$  of 0 to 15 wt%,  $\text{Na}_2\text{O}+\text{K}_2\text{O}+\text{Li}_2\text{O}$  of 0 to 19 wt%, and  $\text{CaO}+\text{MgO}+\text{SrO}$  of 0 to 13 wt%, each of the fourth, fifth, and sixth glass powders having an average particle diameter of 0.5 to  $10\mu\text{m}$ , a softening temperature of 390 to  $630^\circ\text{C}$ , a thermal expansive coefficient of  $63 \times 10^{-7}$  to  $83 \times 10^{-7}/^\circ\text{C}$ , a dielectric constant of 5 to 20, and an etching rate of 2.0 to  $50.0\mu\text{m}/\text{min}$ , the second filler including at least two oxides selected from the group consisting of  $\text{NiO}$ ,  $\text{Fe}_2\text{O}_3$ ,  $\text{CrO}$ ,  $\text{MnO}_2$ ,  $\text{CuO}$ ,  $\text{Al}_2\text{O}_3$ , and  $\text{SiO}_2$ , which have dark colors, the third filler including at least one compound selected from the group consisting of  $\text{TiO}_2$ ,  $\text{ZrO}_2$ ,  $\text{ZnO}$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{BN}$ ,  $\text{SiO}_2$ , and  $\text{MgO}$ , each of the second and third fillers having an average particle diameter of 0.1 to  $10\mu\text{m}$ , a ratio of the volume of the filler with respect to the volume of the glass powder for the barrier ribs being 0.05 to 0.67, thereby the barrier ribs having a dielectric constant of 5 to 16 and an etching rate of 2 to  $50\mu\text{m}/\text{min}$  and enabling the glass substrate having the barrier ribs to have a bending of at most 0.3 mm, when the barrier ribs have been baked for 10 to 60 minutes at 450 to  $600^\circ\text{C}$ , the barrier ribs having a height difference of at most 1% when the barrier ribs has been baked at  $510^\circ\text{C}$  for one hour after being etched by acid-based etching solution, the barrier ribs having a destruction ratio of 50% when an iron rod, which weighs 500g and has an end portion shaped like a sphere having a radius of 3 mm, is dropped one hundred times vertically onto uppermost surfaces of the barrier ribs from 5 mm above the uppermost surfaces, each of the barrier ribs having at least one

layer; and the red phosphorous layer includes at least two kinds of oxides selected from the group consisting of oxides Y, Gd, B, and Eu, the green phosphorous layer includes at least one kind of oxide selected from the group consisting of oxides Zn, Si, Mn, Y, B, Tb, Ba, and Al, and the blue phosphorous layer comprises at least two kinds of oxides selected from the group consisting of oxides Ba, Mg, Al, Sr, Mn, and Eu, so that, in the phosphorous layers, color temperatures are maintained between 8,000K and 13,000K.

9. The closest prior art (Sakamoto) teaches barrier ribs comprised of several glasses and an inorganic filler but fails to exemplify a rear plate of a plasma display panel comprising each of the limitations recited above.

10. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sakamoto (US 2004/0245929) discloses a gas-discharge display device. Lee (US 2003/0155863) discloses a dielectric composition for a plasma display. Asano (US 2002/0195940) discloses a back plate for plasma display. Ryu (US 2001/0051585) discloses a composition for barrier ribs of a plasma display. Yonehara (US 2001/0017519) discloses a plasma display.

**Contact Information**

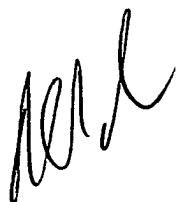
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (571) 272-2461. The examiner can normally be reached on M-TH (7-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Quarterman  
Examiner  
Art Unit 2879

kq   
7 January 2008

  
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